



IN THE U.S. PATENT AND TRADEMARK OFFICE

Appl. No. : 10/576,975  
Applicant : Holger Krummel and Stephan Hartwig  
Filed : 20 April 2006  
Art Unit : 2131  
Examiner : Michael R. Vaughan  
Docket No. : 851.0015.U1(US)  
Customer No. : 29683

Title : A METHOD AND DEVICE RELATING TO SECURITY IN A RADIO  
COMMUNICATIONS NETWORK

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

DECLARATION UNDER 37 C.F.R. § 1.131

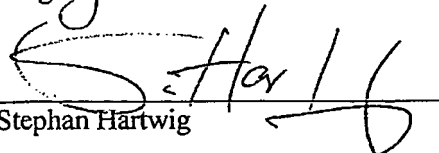
1. I hereby attest that I am an original, first and joint inventor of the invention described and claimed in the above-referenced patent application now pending before the U.S. Patent Office. Exhibit A in four (4) numbered pages is an invention report that relates to that patent application and represents my own work on the invention while I was in Finland or in another World Trade Organization country. Exhibit A forms a part of this Declaration.

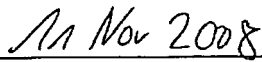
2. I conceived of the invention at least as early as 26 May 2003, the date on which I signed the invention report as shown in Exhibit A near the bottom of page 1.

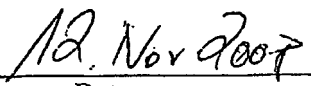
3. This invention report was submitted to my employer-Nokia's patent coordinator, Roland Schink, on this same day, 26 May 2003.

4. I hereby attest that Exhibit A is a true copy of my invention report as amended with my own signature at page 1 and handwritten information at the top of page 1 within the block entitled "Invention Report Received". I hereby acknowledge that the statements made herein are true or are made on information and belief that is believed to be true. I further acknowledge that any willful false statements are punishable by fine or imprisonment, or both, in accordance with 18 U.S.C. § 1001; and that such false statements may jeopardize the validity of any patent that may issue from the application to which this Declaration pertains.

  
\_\_\_\_\_  
Holger Krummel

  
\_\_\_\_\_  
Stephan Hartwig

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Date

## INVENTION REPORT

|   |  |   |   |
|---|--|---|---|
| Title of the invention:<br>Network passkey for shared secret based authentication   |  | <b>INVENTION REPORT RECEIVED</b>              |   |
|   |  | Code:<br><i>HC 42728</i>                      | Patent Engineer/Committee:<br><i>A. Schink / MEBO</i> |
| Please type the description of the invention in this template. If you choose to use an attachment, make sure you answer all the questions in the template.  |  | Place:<br><i>Bochum</i>                       | Date:<br><i>16.05.2003</i>                            |
|   |  | Signature of receiver:<br><i>Luigi Schink</i> |   |
| Names, employee numbers, job titles and nationalities of all inventors:<br>Holger Krummel<br>Stephan Hartwig  | Home addresses of the inventors in respective order: | Business/Technology Units and cost centres:   |   |
| Email addresses of the inventors working outside Nokia:   |  |   |   |
| Office address of the <b>first inventor acting as a contact</b>   |  |   |   |
| Phone of the first inventor:  |  | Fax of the first inventor:                    |   |
| Line manager(s)   |  |   |   |
| Project:  |  | Project Manager:                              |   |
| Related product(s):   |  | Related standard(s):                          |   |
| The invention becomes public on (see section 11 of the invention report):   |  |   |   |
| I am/ We are the sole/ and original inventor(s) of this invention.  |  |   |   |
| The company may, by virtue of applicable legislation, be entitled to full or partial rights to the invention.<br>I/ We acknowledge my/ our obligation to sign as inventor(s) all documents that may be required for protecting the invention in different countries.  |  |   |   |
| <b>Applicable to inventions made by inventors employed in FI, DK, DE and SE only.</b><br>Unless the inventor requests the Invention Report to be responded to within four (4) months from the date this Invention Report is received or such other period as the mandatory provisions of the applicable local law may otherwise require, the inventor consents to the right of the employer to use a reasonable period of time for the evaluation of the invention. A reasonable period of time may exceed four (4) months.<br><input type="checkbox"/> I/ We request that the Invention Report be responded to within four (4) months. |  |   |   |
| Date: <i>26 May 2003</i><br>Signature(s) of inventor(s): <i>Holger Krummel S. Hartwig</i>   |  |   |   |

I have read and understood the invention described in this Invention Report

Date: *26*

Signature of Manager or Patent Engineer

## DESCRIPTION OF THE INVENTION

## 1. Field of technology and background

*Describe here the technology and the areas of use the invention relates to. Provide here general background knowledge that is required to understand the framework of the invention, and describe the problem to be solved and the invention later.*

Authentication between Bluetooth devices relies on the idea of a shared secret, which is called passkey in Bluetooth terminology. Usually, the passkey is only used as a shared secret for authenticating a pair of devices. This can be extended in an intelligent manner, if several devices establish a connection.

## 2. Problem

*Describe here the problem that the invention solves or the situation that the invention improves, and preferably concentrate on the technical aspects of the problem or the situation.*

If more than two devices want to establish authenticated Bluetooth connections, the "master" of the connection (who is in the center role and therefore administrator of the network) has to agree on a dedicated passkey with all of the "slave" devices (or, more precisely, their owners). The agreed passkeys have to be entered for each of the "slave" devices at both the "slave" device and the "master" device. This is quite cumbersome for the master, especially if the number of people in a network grows.

## 3. Prior art

*Describe here how the problem was solved earlier. Please state also the source of prior art accurately.*

The master agrees with each user verbally on a passkey. The master enters each passkey in order to authenticate with the slaves.

## 4. Invention

*Put here a short crystallization of the invention on a general level including possible use cases.*

All participants agree on a common "network" passkey. This passkey is entered all slaves and the master (only once!).

If a new device joins the network and wants to authenticate with the master, the master will try the network passkey for the authentication with the new device first. If it fails, the master (and the new slave) will prompt the user for a different passkey.

## 5. Implementation

*Describe exemplary implementations in detail with alternatives here, including at least the implementation you consider to be the best. Describe the crucial elements in detail.*

The network passkey is stored in the phone for future usage with all devices, which want to join the network. Additionally, this passkey is communicated verbally to all users in the network.

If two devices cannot authenticate using the network passkey, their owners have to agree on a different passkey.

I have read and understood the invention described in this Invention Report

Date:

Signature of Manager or Patent Engineer

**7. List of figures**

Write the figure captions here as a list (Figure 1 presents ..., Figure 2 presents ...) and include the images into the invention report (section 5 or section 15) in Word-compatible format (i.e., no embedded images that won't show on the screen when the document is viewed) labelled with the figure number (Figure 1., Figure 2.). Alternatively, include the figures in a separate document (PowerPoint etc.), but make sure to include the description of the figures also here.

**8. List of abbreviations****9. Supervision**

Explain here how we can (if possible) recognise if a competitor is using the same product/feature.

**10. Commercial value**

Evaluate three aspects here: **a)** is the invention planned to be used in a Nokia product (which), **b)** is the invention going to be proposed to a standard (which), and **c)** would Nokia's competitors benefit from the use of the invention (who/how)?

**11. Publication**

If the invention is becoming public in any way, please describe the exact way and details of publication here: what will be disclosed and how. For example, submission of standardization contributions, scientific papers, conference abstracts, theses or papers written for a degree and commercial brochures and offers for sale may be considered as "publication". Also, any use in a product that is publicly available or disclosure (written or oral) to another company without a non-disclosure agreement (NDA) is considered to be a publication.

**12. Dates of the invention**

If you can, put here the date when you first thought of the invention (this date should be verifiable from your personal dated notes). Also, if you have completed the invention, e.g., written a computer program, put this date here (the completion should be verifiable by a witness). Also, provide all evidence material relating to the dates to the patent department.

I have read and understood the invention described in this Invention Report

Date:

Signature of Manager or Patent Engineer

16-May-03

**13. Experts**

*If you know any experts that are able to comment the invention, list them here. Also, please mention if you are aware that a certain patent engineer has earlier experience of similar invention reports.*

**14. Further comments**

*Any further comments may be put here, e.g., if you consider the invention to require further development, know of a related earlier invention report in Nokia by you or others, or have any additional information that you think may otherwise affect the decision process.*

**15. The figures**

*Place the figures here, or among the description of the implementation. Alternatively, include the figures in a separate document (PowerPoint etc.).*

*I have read and understood the invention described in this Invention Report*

Date:

Signature of Manager or Patent Engineer